

Ad Hoc Expert Meeting on

**Addressing the Transport and Trade
Logistics Challenges of the
Small Island Developing States (SIDS):
Samoa Conference and Beyond**

11 July 2014

**Climate change impacts and adaptation for
transport infrastructure in SIDS – the case for
action**

Presentation by

Ms. Regina Asariotis

Chief, Policy and Legislation Section, Trade Logistics Branch
Division on Technology and Logistics, UNCTAD

Ad Hoc Expert Meeting, Geneva, 11 July 2014
Addressing the Transport and Trade Logistics challenges of the Small Island
Developing States (SIDS): Samoa Conference and Beyond

Climate change impacts and adaptation for transport infrastructure in SIDS - the case for action

Regina Asariotis
Chief, Policy and Legislation Section, TLB/DTL, UNCTAD

unctad.org/ttl/legal

Synopsis

- Climate change implications for transport
- Relevant work by the UNCTAD Secretariat and follow-up
- The special case of the SIDS
- UNDA Project 2014-2017: Climate change impacts on coastal transport infrastructure in the Caribbean: Enhancing the adaptive capacity of Small Island Developing States

Climate change implications for transport [1]

Climate change

- A global challenge and “*a defining issue of our era*” (UN SG)
- Increasingly compelling scientific evidence (IPCC AR5, 2013)
- Huge potential costs associated with inaction (5-20 % of the Global GDP, annually (STERN Review 2006))
- A serious development threat particularly for the Least Developed Countries (LDCs) and the Small Island Developing States (SIDS)
 - Since 2008, integration of climate change considerations into UNCTAD's work on transportation

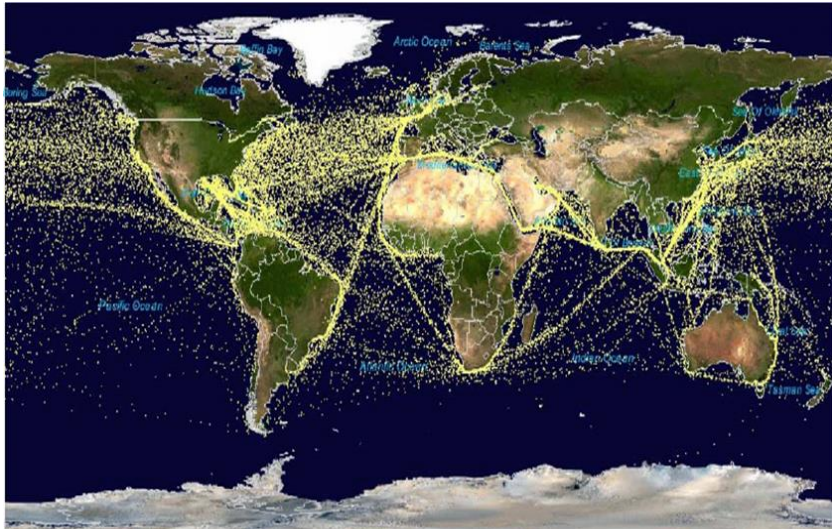
3

Climate change implications for transport [2]

Maritime transport

- The facilitator of global trade, carrying over 80% of the volume (70% of value) of world merchandise trade – port to port
- Provides access to global markets: crucial for all countries - developed and developing - including the landlocked (and sea-locked)
- Derived demand – reflecting developments in global economy and merchandise trade
- Globalization: strong interconnectedness / interdependence of shipping/ports
- Shipping and ports are key-nodes in global supply-chains

4



Source: Simon Bennett, ICS, presentation at UNCTAD Ad Hoc Expert Meeting 2011

Climate change implications for transport [3]

The climate change debate: two sides of the “coin”: causes - effects

- **Mitigation:** action directed at addressing CC causes (long-term)
- **Adaptation:** action directed at coping with CC impacts (short-long term);
 - requires understanding of impacts, which vary considerably by type of forcing, region, sector etc.

In Transport:

- much of international debate/policy action focuses on CC mitigation (i.e. reduction / control of GHG emissions)
- Comparatively little focus on study of impacts and development of adaptation policies/actions

Climate change implications for transport [4]

Climate change/extreme events likely to have *direct* and *indirect* impacts on maritime transport infrastructure and services

Sea-level rise, temperature and precipitation changes, extreme storms and floods and other factors are likely to

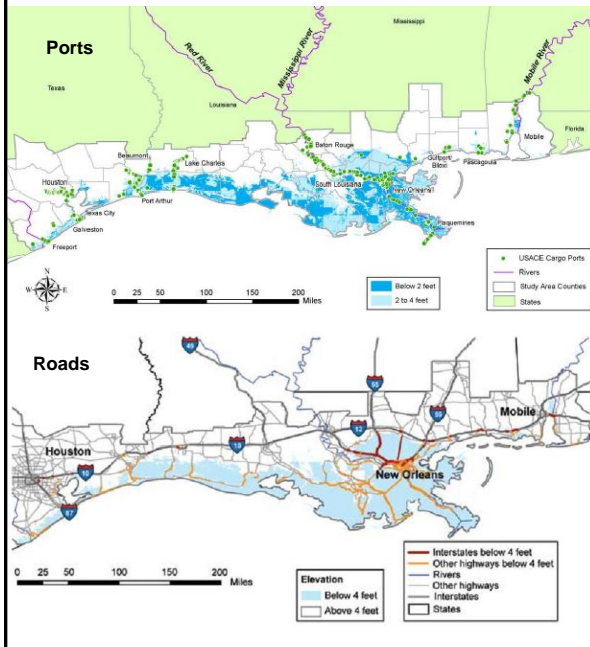
- affect ports and coastal transport infrastructure, hinterland transport and the broader supply-chain
- affect demand for shipping/transport costs/global production locations
- open new arctic sea-lanes due to polar ice melting

7

Major climate change impacts on coastal transport infrastructure

Factor	Impacts
Sea level (mean and extreme)	Coastal transport infrastructure
<ul style="list-style-type: none"> • Mean sea level changes • Increased destructiveness of storms/storm surges • Changes in the wave energy and direction 	Damages in port infrastructure/cargo from incremental and/or catastrophic inundation and wave regime changes; higher seaport construction/maintenance costs; sedimentation/dredging issues in port/navigation channels; effects on key transit points; increased risks for coastal road links; relocation of people/businesses; insurance issues
Precipitation	
<ul style="list-style-type: none"> • Changes in the intensity and frequency of extremes (floods and droughts) 	Seaport, airport and road infrastructure inundation; damage to cargo/equipment; and vital node damage (e.g. bridges)
Temperature	
<ul style="list-style-type: none"> • Higher mean temperatures, • Heat waves and droughts • Increased variability in temperature extremes 	Damage to infrastructure/equipment/cargo and asset lifetime reduction; higher energy consumption for cooling cargo; changes in transport demand; lower aircraft loads allowed-need for runway extension

US Gulf Coast study



Flood risk at US Gulf coast under sea level rise 0-6-1.2 m. Relative sea level rise of about 1.2 m (4 feet) could permanently inundate more than 2400 miles of roads, over 70% of the existing port facilities, 9% of the railway lines and 3 airports.

Relevant work by the UNCTAD Secretariat and follow-up

2009	UNCTAD Multiyear Expert Meeting: “Maritime Transport and the climate change challenge”
Follow-up	UNCTAD (ed.) Maritime Transport and the Climate Change Challenge Earthscan (Routledge/Taylor&Francis) (2012) 327 pp
2010	Joint UNECE-UNCTAD Workshop: “Climate change impacts on international transport networks”
Follow-up	UNECE Group of Experts on Climate Change Impacts and Adaptation for International Transport Networks (2011-2014) 2012 International Conference - including session on SIDS 2014 Final Report - Climate Change Impacts and Adaptation for International Transport Networks
2011	UNCTAD Ad Hoc Expert Meeting: “Climate change impacts and adaptation: a challenge for global ports”
Follow-up	Academic paper co-published by Experts (2013) Becker et. al, A note on climate change adaptation for seaports, Climatic Change, 2013
2013-2014	UNCTAD Port-Industry Survey on Climate Variability and Change

The special case of the SIDS

Large dependency on imports (i.e. international transport)

High Transport costs (e.g. transport costs of Caribbean trade at least 30 % higher than the world average, see Pinnock and Ajagunna, 2012)

Coastal transport infrastructure (seaports and airports): critical lifelines for external trade, food, energy, tourism (cruise-ships and air transport)

These assets are threatened by sea level rise and extreme events (storms)

Strong nexus between transport and tourism: “Sun-and-sand-tourism“, often a very significant SIDS industry, is threatened by climate - driven coastal and beach erosion, together with its facilitating infrastructure (i.e. seaports, airports, coastal access roads)

11

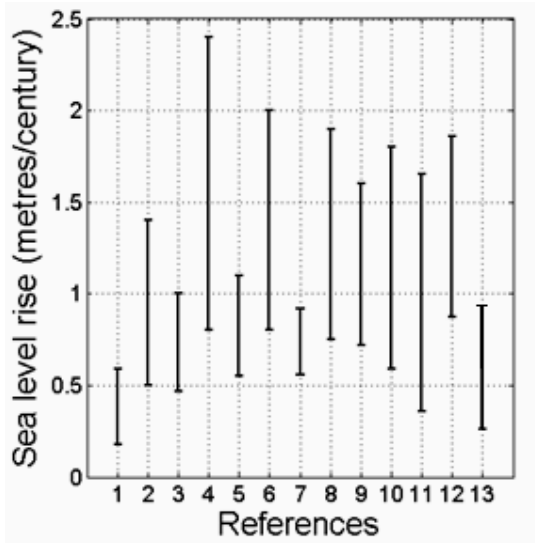
Caribbean SIDS: The most air-transported tourist dependent region

Country	Travel & tourism % of GDP (World Ranking, 2010)	% visitors arriving by air
Anguilla	61.0 (5)	84
Antigua & Barbuda	78.5 (1)	95
Bahamas (the)	46.5 (8)	88
Barbados	48.1 (6)	92
Belize	28.2 (17)	85
Bermuda	11.2 (65)	86
British Virgin Islands	43.7 (10)	94
Cayman Islands	23.3 (24)	67
Dominica	23.3 (23)	88
Grenada	24.4 (22)	96
Guyana	11.5 (63)	99
Haiti	7.0 (125)	n.a.
Jamaica	25.4 (20)	92
Montserrat	n.a.	99
St. Kitts & Nevis	30.5 (16)	91
St. Lucia	35.1 (13)	90
St. Vincent & the Grenadines	23.6 (23)	98
Suriname	4.6 (164)	93
Trinidad & Tobago	10.9 (66)	95

Tourism: 12% of GDP

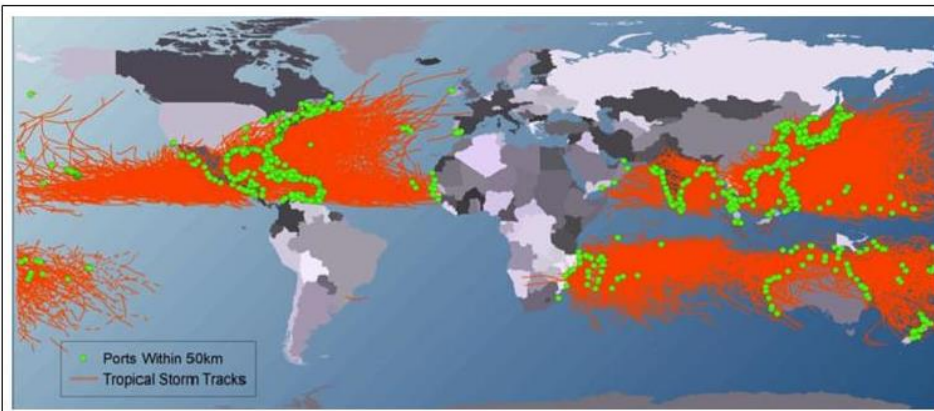
**In some Caribbean SIDS
more than 50 % of GDP
(ECLAC, 2011)**

Recent mean sea level rise projections for 2100



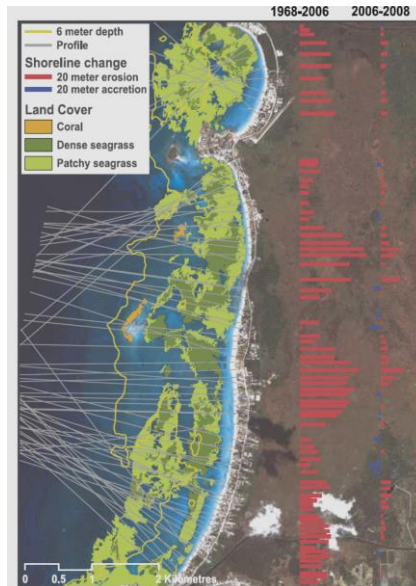
Key: 1, IPCC (2007), 0.18-0.59 m; 2, Rahmstorf et al. (2007); 3, Horton et al. (2008); 4, Rohling et al. (2008); 5, Vellinga et al. (2008); 6, Pfeffer et al. (2008); 7, Kopp et al. (2009); 8, Vermeer and Rahmstorf (2009); 9, Grinsted et al. (2010); 10, Jevrejeva et al. (2010); 11, Jevrejeva et al. (2012); 12, Mori et al. (2013); and 13, IPCC (2013). Projection variability reflects differences in approaches (UNECE, 2013).

Shipping and seaports are vulnerable to storms



Seaports within 50 km of tropical sea storm tracks (1960–2010). Port and storm data from National Geospatial-Intelligence Agency (2011) and Knapp et al. (2010). (Becker et al., 2013)

Touristic beach erosion



Many SIDS beaches are under severe threat of CC-driven erosion.

For example, for many Caribbean islands, average beach retreat/erosion is 0.5-1.0 m/yr - (Cambers, 2009; Peduzzi et. al 2013).

UNCTAD UN Development Account Project 2014-2017

Technical assistance project to build the adaptive capacity of SIDS, taking into account regional specificities

"Climate change impacts on coastal transport infrastructure in the Caribbean: Enhancing the adaptive capacity of Small Island Developing States (SIDS)"

- Focus on key coastal infrastructure for transport (i.e. ports and as appropriate airports)
- Case-study approach involving 2 vulnerable Caribbean SIDS (Jamaica and St Lucia)
- Objective:
 - enhance the adaptive capacity at the national level (case-study countries)
 - develop a transferable methodology for assessing climate-related impacts and adaptation options in SIDS
- Guidance material, national and regional training workshops, and web platform

Thank you!

See unctad.org/tt/legal for further information/documentation/presentations

UNCTAD Expert Meeting 2009
Summary of the proceedings (UNCTAD/DTL/TLB/2009/1)

UNECE-UNCTAD Workshop 2010
Background note by UNECE and UNCTAD secretariats ECE/TRANS/WP.5/2010/3

UNCTAD Ad Hoc Expert Meeting 2011
Information Note (UNCTAD/DTL/TLB/2011/1)
Main outcomes and Summary of Discussions (UNCTAD/DTL/TLB/2011/3)

UNCTAD (ed.) *Maritime Transport and the Climate Change Challenge*, Earthscan
(Routledge/Taylor&Francis), 2012, 327 pp.

On UNECE Expert Group on CC Impacts and Adaptation for International Transport
Networks, see http://www.unece.org/trans/main/wp5/wp5_ge3_02.html